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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,386	03/15/2004	Tongbi Jiang	500180.03 (29249/US/2)	3160

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EXAMINER

LOUIE, WAI SING

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/801,386	Applicant(s) JIANG, TONGBI	
	Examiner Wai-Sing Louie	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/18/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 34, 36-37, and 44-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Conru et al. (US 5,086,018).

With regard to claim 34, Conru et al. disclose a semiconductor package (col. 2, line 46 to col. 5, line 66 and fig. 2), comprising:

- a semiconductor die 12 (col. 2, line 48 and fig. 2);
- a substrate 18 to which the semiconductor die 12 is attached (col. 3, lines 55-60 and fig. 2);
- a adhesive die attach material 17 disposed between the semiconductor die 12 and the substrate 18, the adhesive die attach material 17 directly abutting the substrate 18 by heat and pressure (col. 3, line 66 to col. 4, line 9).
- the curing process is written in a “product by process” claim language. A “product by process” claim is direct to the product *per se*, no matter how actually made. See In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) and the related case law cited therein which makes it clear that it is the final product *per se* which must be determined in a “product by process” claim, and not the patentability of the

process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. As stated in Thorpe,

even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935).

Note that applicant has burden of proof in such cases as the above case law makes clear.

With regard to claims 36 and 44, Conru et al. discloses a lead frame 10 disposed between the semiconductor die 12 and the substrate 18 (fig. 1).

With regard to claims 37 and 45, Conru et al. disclose the semiconductor die 12 is electrically coupled to conductive traces 14 formed on the surface of the substrate 18 through conductive bond wire 16 (fig. 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 35, 38-41, 43, and 46-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conru et al. (US 5,086,018).

With regard to claims 35 and 43, Conru et al. disclose adhesive die attach material 17 is a tri-layer die attach tape. However, adhesive layer 11 is a tri-layer die attach tape (col. 3, lines 15-32). Therefore, adhesive layer 11 could be duplicated and used to attach the substrate to the semiconductor die 12. Duplication of parts was held to have been obvious. *St. Regis Paper Co. v. Beemis Co. Inc.* 193 USPQ 8, 11 (1977); *In re Harza* 124 USPQ 378 (CCPA 1960).

With regard to claims 38-41 and 46-49, Conru et al. disclose a uniform pressure and heat are applied to the package simultaneously (col. 4, lines 1-9). Conru et al. do not disclose a length of time of 30 minutes to 4 hours for pressing with 30 to 259 psi and heating to 100° to 200°C. Since the applicant has not established the criticality of the timing, pressure, and temperature stated and since these timing, pressure, and temperature are in common use in similar devices in the art, it would have been obvious to one of ordinary skill in the art to use these values in the device. Where patentability is said to be based upon particular chosen dimension or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conru et al. (US 5,086,018) in view of Desai et al. (US 6,266,249).

With regard to claim 42, in addition to the limitations disclosed in claim 34, Conru et al. also disclose:

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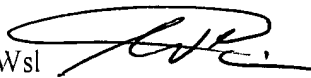
- a plurality of bond pads 53 disposed on the semiconductor die 52, the bond pads 53 being electrically coupled to a corresponding plurality of conductive leads 51 on the second surface of the substrate 57 by the bond wire 54 (fig. 5). Conru et al. do not disclose the aperture on substrate 57 and where the bond pads aligned with and bond wires passing through. However, Desai et al. disclose through holes 18 on the substrate 22, where the semiconductor device 30 aligned the through holes 18 (Desai col. 3, lines 51-64) and conductive traces 24 are electrically coupled the via 18 by solder (Desai col. 3, lines 40-49). Desai teaches the IC device can be miniaturized by stacking the devices and connecting with through holes (Desai col. 1, lines 18-22 and lines 39-43). Therefore, it would have been obvious to one of ordinary skill in the art to modify Conru's device with the teaching of Desai to provide a substrate with apertures in order to stack the devices and connect with through holes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Wsl
August 3, 2005.